Environment and Climate Change Canada
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Environment and Climate Change Canada's Technical Comment Submission to the Nunavut Water Board

Respecting the Mary River Project – Phase 2 Proposal Type A Water Licence (2AM-MRY1325) Amendment Application

Proposed by Baffinland Iron Mines Corporation

July 15, 2019

Canada

Executive Summary

Baffinland Iron Mines Corporation (the Proponent) is proposing an expansion to its existing Mary River Project (the Project) located on Baffin Island, Nunavut, which is known as the Phase 2 Proposal. The Phase 2 Proposal includes an increase in iron ore production and transportation at the northern transportation corridor from the currently approved 6.0 Million tonnes per year (Mtpa) to 12 Mtpa. To accommodate this increase, the Proponent proposes to construct and operate a 110km railway from the Mine Site up to the port facilities at Milne Inlet, as well as to expand the port facilities to accommodate cape size vessels and expand the mine camp. The Phase 2 Proposal is a tiered approach, where the proposed increase in production to 12 Mtpa via the northern transportation corridor would eventually lead into the development of the southern transportation corridor via Steensby Inlet, which is currently approved for an iron ore production of 18 Mtpa. Once both parts of the Phase 2 Proposal are operational, the total authorized production of the mine would be of 30 Mtpa.

Environment and Climate Change Canada (ECCC) has participated in all phases of the review process for the Phase 2 Proposal thus far and is continuing its participation through this Technical Comments Submission for the Phase 2 Proposal Type A Water Licence Amendment Application.

The Technical Submission contains our expert advice on the Proponent's assessment of the environmental effects and proposed mitigations and identifies outstanding concerns and associated recommendations for consideration by Nunavut Water Board (NWB).

ECCC's technical comments and recommendations are provided with respect to water quality, and specifically outstanding issues in regards to sewage and wastewater management at Milne Port, water quality monitoring during railway construction, and the *Metal and Diamond Mining Effluent Regulation* (MDMER) observance.

List of Abbreviations

ECCC	Environment and Climate Change Canada
EQC	Effluent Quality Criteria
FEIS	Final Environmental Impact Statement
FSSWMP	Fresh Water Supply, Sewage, and Wastewater Management Plan
MDMER	Metal and Diamond Mining Effluent Regulations
MMER	Metal Mining Effluent Regulations
NWB	Nunavut Water Board
PWSP	Polishing Waste Stabilizing Pond
TSS	Total Suspended Solids

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1.0 Introduction

Baffinland Iron Mines Corporation (the Proponent) is proposing an expansion to its existing Mary River Project (the Project) located on Baffin Island, Nunavut, near the community on Pond Inlet. The expansion is called the Phase 2 Proposal. On May 16, 2019, the Nunavut Water Board (NWB) initiated the technical review of the Type "A" Licence 2AM-MRY1325 for the Phase 2 Proposal.

The Phase 2 Proposal consists of an expansion of the operational project infrastructure as well as an increase in production along the northern transportation corridor. The proposed increase would see the mine's production go up to 12 tonnes per year (Mtpa) from the currently approved 6.0 Mtpa. The Phase 2 Proposal is also a tiered approach, where the proposed increase in production to 12 Mtpa via the northern transportation corridor would eventually lead into the development of the southern transportation corridor via Steensby Inlet, which is currently approved for an iron ore production of 18 Mtpa. Once both parts of the Phase 2 Proposal are operational, the total authorized production of the mine would be of 30 Mtpa.

To accommodate this increase, the Proponent proposes to construct and operate a 110km railway from the Mine Site to the port facilities at Milne Inlet via the northern transportation corridor. Further, the increase in production requires an expansion of the port facilities that will include the construction of a second dock that will have the ability to receive Cape Size vessels. The shipping season also needs to be extended from July 1 to November 15. The mine camp will also need to be expanded in order to accommodate a peak of 1050 workers during the construction period of the Phase 2 Proposal.

The Phase 2 Proposal builds upon the Early Revenue Phase (ERP) and "original" Mary River Project. The Mary River Project was approved in 2012 and consisted of a southern transportation corridor (including a railway) that would transport up to 18 Mtpa of iron ore through Steensby Inlet with year-round shipping (the Approved Project). In 2014, the ERP was approved to permit the production of up to 4.2 Mtpa of iron ore that would be transported from the Mine Site via the Tote road and shipped via Milne Inlet. The ERP was recently approved to temporarily increase the iron ore production to 6.0 Mtpa.

Environment and Climate Change Canada (ECCC) has participated in all phases of the Mary River Project and is continuing its participation in the Phase 2 Proposal Type A Water Licence Amendment review by providing this Technical Comment Submission to the NWB for consideration.

ECCC comments and recommendations are based on ECCC's mandate in the context of the *Canadian Environmental Protection Act* (CEPA) and the pollution prevention provisions of the *Fisheries Act.* In Nunavut, ECCC provides specialist expert information or knowledge to the NIRB in accordance with the expertise that ECCC has available and as required under Article 12 of the Nunavut Agreement and Section 197 of the *Nunavut Planning and Project Assessment Act*.

A summary of ECCC's mandate and legislation is provided in Section 2.0. ECCC's technical review comments and recommendations are provided in Section 3.0 and Acknowledgments in Section 4.0.

ECCC's technical comments and recommendations for the outstanding issues are provided with respect to water quality and specifically to outstanding issues in regards to sewage and wastewater management at Milne Port, water quality monitoring during railway construction, and the *Metal and Diamond Mining Effluent Regulation* (MDMER) observance.

2.0 Environment Climate Change Canada's Mandate, Roles and Responsibilities

The mandate of ECCC is determined by the statutes and regulations under the responsibility of the Minister of Environment and Climate Change (ECCC). ECCC's mandate covers matters such as the preservation and enhancement of the quality of the natural environment (including water, air and soil quality, and the coordination of the relevant policies and programs of the Government of Canada), renewable resources (including migratory birds and other non-domestic flora and fauna), meteorology, and the enforcement of rules and regulations. ECCC's specialist advice for the review of the Phase 2 Proposal Type A Water Licence Application is provided in the context of the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act*.

ECCC administers the pollution prevention provisions of the *Fisheries Act*, which prohibits the deposit of a deleterious substance into fish-bearing waters. ECCC also participates in the regulation of toxic chemicals and the development and implementation of environmental quality guidelines pursuant to CEPA.

Additional information on ECCC's mandate can be found at: https://www.canada.ca/en/environment-climate-change/corporate/acts-regulations/acts-administered.html.

3.0 Environment Climate Change Canada's Technical Review Comments

This Technical Submission summarizes the results of ECCC's technical review of the Type "A" Licence (2AM-MRY1325). ECCC's technical comments and recommendations are provided with respect to water quality, and specifically to outstanding issues with sewage and wastewater management at Milne Port, water quality monitoring during railway construction, and the *Metal and Diamond Mining Effluent Regulation* (MDMER) observance.

3.1 Milne Polishing Waste Stabilization Pond (PWSP) Water Treatment

Reference(s):

- Baffinland Iron Mines Corporation. May 2019. Mary River Project – Phase 2 Proposal Updated Application for Amendment No. 2 of Type A Water Licence 2AM-MRY1325, Attachment 23 (Part 1): Fresh Water Supply, Sewage, and Wastewater Management Plan, Section 5.4.1 and Appendix F: Polishing Waste Stabilization Ponds (PWSP) Effluent Discharge Plan.
- Baffinland Iron Mines Corporation. May 2019. Mary River Project – Phase 2 Proposal Updated Application for Amendment No. 2 of Type A Water Licence 2AM-MRY1325, Attachment 18.2: Milne Port Water and Sewage Schematic.

Proponent's Conclusion(s):

Section 5.4.1 of the Fresh Water Supply, Sewage, and Wastewater Management Plan (FSSWMP) states that,

> *"…partially or untreated sewage from the PWSP(s) will be trucked back to the treatment plant for treatment or treated using an in-situ pond treatment system and discharged to the ocean outfall (Refer to Appendix F - PWSP Effluent Discharge Plan)"* (Page 24 of 346).

The Polishing Waste Stabilizing Pond (PWSP) would also be used as a backup holding pond for untreated sewage in the event of a power failure. The current Port Site Water and Sewage Process Flow Diagram shows the Polishing Pond receiving effluent from Sewage Treatment Plants 1 and 2 (in future).

Appendix F's technical memorandum dated March 27, 2012 states that,

"the Milne PWSP is estimated to hold approximately 0.5 million litres(approximately 130,000 US gals) of combined …sludge, grey water, and snow melt. … the quality of the water in the Milne PWSP has typically been such that the spring melt water has been compliant with the criteria without further polishing treatment" (Page 2 and 3).

The memo does not contemplate sewage inputs.

ECCC's Conclusion(s):

Appendix F has not been updated to reflect the inputs that would be associated with the Phase 2 activities, and the statement in Appendix F about treatment is reflective of a much smaller scale of operations, with potentially different inputs than what is proposed for Phase 2 (i.e., treated and untreated or under-treated wastewater).

The Port Site Water and Sewage Process Flow Diagram shows treatment and discharge; the Port Site Area Water Balance Block Flow Diagram notes that this will be used only on a contingency basis and the PWSP effluent would be discharged to Milne Inlet. In the Fresh Water Supply, Sewage, and Wastewater Management Plan (FSSWMP) the option is also mentioned to truck the PWSP contents to the Mine Site for treatment. It is not clear what the best candidate treatment options are for the Milne PWSP water that would need treatment in order to be suitable for discharge.

ECCC's Recommendation(s):

ECCC recommends that the Proponent:

- Clarify whether there would also be a treatment system for the Polishing Waste Stabilization Ponds (PWSP) at Milne Port (similar to what is at the Mine Site), and, if so, provide details on the system.
- Update the PWSP Effluent Discharge Plan (Appendix F).

3.2 Monitoring of Watercourses during Railway Construction

Reference(s):

- Baffinland Iron Mines Corporation. May 2019. Mary River Project – Phase 2 Proposal Updated Application for Amendment No. 2 of Type A Water Licence 2AM-MRY1325, Attachment 22: Surface Water, Aquatic Ecosystem Management Plan, Sections 10.2.3.1 and 10.2.3.2.

Proponent's Conclusion(s):

Section 10.2.3.1 Construction Monitoring states that,

> *"monitoring will occur at active work areas along the North Railway during construction, as prescribed in a future Fisheries Authorization for crossings. This is expected to include turbidity monitoring downstream"* (Page 48 of 66) and,

Section 10.2.3.2 Post-Construction Monitoring states that,

> *"construction monitoring will occur as described above until such time as turbidity and fish passage concerns have been resolved. Additionally, it will be necessary during construction to divert the upstream portion of several streams into adjacent streams. Hydrological modelling supporting the FEIS Addendum for the Phase 2 Proposal identified 27 such locations. Twenty-three of these locations were deemed low risk, and these will be monitored for a short period of time post-construction (i.e., 1 to 2 years) to verify that the diversions are not having any unexpected effects (Knight Piésold, 2018). Four of the diversions are considered medium or high risk, and one of the streams (CV59-4) is probably fish habitat. Site specific assessments will be undertaken at these diversions during detailed engineering design of the railway. …most of the previously identified diversions have been eliminated. Revised hydrological modelling is currently underway to re-assess this issue"* (Pages 48 and 49 of 66).

ECCC's Conclusion(s):

Construction monitoring of all streams, which are frequented by fish (or flowing into other waterbodies, which are frequented by fish) have not been provided. It is not clear whether a Fisheries Authorization would include monitoring for all construction areas involving stream crossings, or just those involving Authorizations. The actual monitoring has not been sufficiently described. Turbidity is proposed for use as a real-time surrogate for total suspended solids (TSS) but a site specific correlation should be determined in order to estimate TSS from turbidity. It is not specified whether there will be concurrent upstream monitoring, or whether before-after comparisons will be relied upon. Response triggers for implementing mitigation or adaptive management also have not been specified.

ECCC's Recommendation(s):

ECCC recommends that the Proponent provide a detailed description of proposed construction monitoring for the Phase 2 activities.

3.3 Alignment with the Metal and Diamond Mining Effluent Regulations (MDMER)

Reference(s):

- Baffinland Iron Mines Corporation. May 2019. Mary River Project – Phase 2 Proposal Updated Application for Amendment No. 2 of Type A Water Licence 2AM-MRY1325, Attachment 23 (Part 1): Fresh Water Supply, Sewage, and Wastewater Management Plan, Section 7.1, Table 7-2, and Appendix J: Waste Pond Water Treatment Plant Operations – Appendix A.
- Government of Canada. June 2019. Metal and Diamond Mining Effluent Regulations (SOR/2002-222). Available at: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2002-222/nifnev.html

ECCC's Conclusion(s):

There are a number of places in the WL application where references to the MDMER should be updated. These include the following:

- The FSSWMP Section 7.1 outlines effluent quality and describes the MDMER requirements; Table 7-2 includes the current limits for metals, TSS and Radium-226, and includes ammonia. Ammonia will not be required until June 1, 2021, and at that time the limits for arsenic and lead will also change. The text and table do not quite reflect the current requirements nor the upcoming changes.
- Appendix A Operations Manual for Mary River Mine Waste Rock Pile Water Treatment Plant of Appendix J Waste Pond Water Treatment Plant Operations (August 2018) of the FSSWMP also includes references to the *Metal Mining Effluent Regulations* (MMER) and limits which will be changing (Table 1).
- FSSWMP Appendix H - MMER Sampling and Reporting Requirements (dated May 20, 2015) is outdated.
- 7.2 Milne Port Stockpile Surface Water Management Ponds - Note that discharges of any contact water which enters surface waters will be considered effluent and will need to be designated as Final Discharge Points under the MDMER.

ECCC's Recommendation(s):

ECCC recommends that the Proponent:

- Update references from the MMER to MDMER.
- Provide clarification on the discharge criteria that will be applicable.

3.4 Errata

Reference(s):

- Baffinland Iron Mines Corporation. May 2019. Mary River Project – Phase 2 Proposal Updated Application for Amendment No. 2 of Type A Water Licence 2AM-MRY1325, Attachment 23 (Part 5): Fresh Water Supply, Sewage, and Wastewater Management Plan.

ECCC's Conclusion(s):

ECCC notes that in Attachment 23 FWSWMP (Part 5) the pages are mixed up (from pdf pages 52 to 57). It is unclear to ECCC where the documents belong.

ECCC's Recommendation(s):

ECCC recommends that the Proponent clarify pdf pages 52 to 57.

4.0 Acknowledgements

ECCC would like to thank the Nunavut Water Board for this opportunity to provide input to the Mary River Project – Phase 2 Proposal Type “A” Water Licence (2AM-MRY1325) review and looks forward to continuing its participation in this review process.

ECCC’s technical review comments and recommendations are not to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations.